## Claims

1. A magnetorheological clutch, consisting of a stationary part (1; 101), of a rotatable primary part (2; 102) with primary lamellae (4; 104) and of a secondary part (8; 108) with secondary lamellae (17; 117) which is rotatable about a common axis and surrounds the primary part (2; 102), there being formed between the primary part (2; 102) and the secondary part (8; 108) a space (28; 128) which contains a magnetorheological fluid and in which primary lamellae (4; 104) and secondary lamellae (17; 117) alternate in the axial direction, and a regulatable magnetic field acting on the magnetorheological fluid, **wherein**

a) at least one magnet coil (21) is arranged in front of or behind the lamellae (4, 17; 104, 117) in the axial direction and loops around a first U-shaped yoke (20; 120), the two end faces (26; 126) of which are on the same side of the lamellae and parallel to these,

b) at least one second yoke (22; 32; 122) is provided on the side of the lamellae which faces away from the first yoke (20; 120), and

c) the regions of the secondary part (8; 108) which lie inside and outside the lamellae (4, 17; 104, 117) in the radial direction consist of a material of low magnetic permeability.

2. The magnetorheological clutch as claimed in claim 1, **wherein** the cross section of the first U-shaped yoke (20; 120) is increased toward the end face (26; 126).

3. The magnetorheological clutch as claimed in claim 1, **wherein** the second yoke is a flat body (32) running in the circumferential direction and is surrounded by no magnet coil (fig. 3).

4. The magnetorheological clutch as claimed in claim 1, **wherein** the second yoke (22; 122) is also of U-shaped design and is surrounded by a magnet coil (23; 123).

5. The magnetorheological clutch as claimed in claim 1, **wherein** the at least one first U-shaped yoke (20) is connected to the secondary part (8) and the end face (26) of the first yoke (20) forms the boundary wall of the space (28) containing the magnetorheological fluid.

6. The magnetorheological clutch as claimed in claim 1, **wherein** the at least one first U-shaped yoke (120) is connected to the stationary part (101) and is adjacent to an annular region (124) of high permeability of the secondary part (108) (fig. 4).

7. The magnetorheological clutch as claimed in claim 6, **wherein** the at least one second yoke (122) is also connected to the stationary part (101) and is adjacent to an annular region (125) of high permeability of the secondary part (108).

8. The magnetorheological clutch as claimed in claim 6, **wherein** the second yoke (32) is designed without a specific magnet coil in the secondary part (108) otherwise consisting of a material of low permeability.

9. The magnetorheological clutch as claimed in claim 1, **wherein** a number of yokes (20; 20, 22; 20, 75; 20, 84; 20, 94, 95, 96) and magnet coils (21; 21, 23; 21, 76; 21, 85) are provided, their axes lying tangentially in an axially normal plane.

10. The magnetorheological clutch as claimed in claim 9, **wherein** the end faces of the yokes (20; 20, 22; 20, 75; 20, 84; 20, 94, 95, 96) are widened to form annular sectors (50, 51; 70, 71; 80, 81, 82, 83; 90, 91, 92, 93) which almost adjoin one another and the inner and outer radius of which corresponds essentially to that of the lamellae (4, 17; 104, 117).

11. The magnetorheological clutch as claimed in claim 10, **wherein** an even number of magnet coils succeed one another in a polarity such that adjacent legs (94'', 95'', 95', 96', 96'', 20'', 20', 94') of their U-shaped yokes (20, 94, 95, 96) form a common annular sector as an end face.